STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

October 26, 2007

Mr. Scott Vollmer
Keystone Retaining Wall Systems, Inc.
7312 Still Pond Court
Raleigh, NC 27613

Subject: Approval of Keystone's KeySystem I Retaining Wall System

Dear Mr. Vollmer:

The Geotechnical Engineering Unit (GEU) has fully approved Keystone's KeySystem I Retaining Wall System for use on North Carolina Department of Transportation (NCDOT) projects in accordance with the "NCDOT Policy for Mechanically Stabilized Earth Retaining Walls". The policy includes restrictions for MSE wall systems with segmental retaining wall (SRW) units and may be obtained from:
http://www.ncdot.org/doh/preconstruct/highway/geotech/msewalls/

Keystone calculated maximum reinforcement loads in accordance with the *AASHTO Standard Specification for Highway Bridges* using the Simplified Coherent Gravity approach in the *Evaluation of the KeySystem I Retaining Wall* by the Highway Innovative Technology Evaluation Center (HITEC). Keystone also submitted calculations using the Meyerhof Coherent Gravity approach to determine maximum reinforcement loads for the surcharge and backslope design examples in the HITEC report. Based on these calculations and in accordance with NCDOT's Standard Mechanically Stabilized Earth Retaining Walls Special Provision, the coherent gravity method is acceptable for analysis. The provision may be obtained from:
http://www.ncdot.org/doh/preconstruct/highway/geotech/provnote/

AASHTO Standard Specifications for Highway Bridges reduces the allowable tensile stress for grid reinforcing members connected to a rigid facing element to $0.48F_y$. However, Keystone has submitted justification for not applying this reduction to the KeySystem I Retaining Wall System. Keystone's KeySystem I Retaining Wall System will be allowed a design exception to AASHTO to use an allowable tensile stress for reinforcements, in the wall backfill away from the wall face connections, of $0.55F_y$.

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1020 BIRCH RIDGE DRIVE
RALEIGH NC 27610

Keystone fiberglass pins are required and defined as a miscellaneous component in accordance with the standard MSE Retaining Walls provision.

If you have any questions, I can be reached at (919) 250-4088.

Sincerely,

Njoroge W. Wainaina
State Geotechnical Engineer

cc: K. J. Kim, Ph.D., P.E., Eastern Regional Geotechnical Manager (w/ HITEC report, details and calculations)
John Pilipchuk, L.G., P.E., Western Regional Geotechnical Manager (w/ HITEC report, details and calculations)
Don Moore, L.G., Geotechnical Contract Administrator (w/ HITEC report, details and calculations)
Greg Perfetti, P.E., State Bridge Design Engineer
Dave Henderson, P.E., State Hydraulics Engineer
Cecil Jones, P.E., State Materials Engineer
Rodger Rochelle, P.E., State Alternative Delivery Engineer
Tommy Cozart, P.E., Special Design Engineering Supervisor
Randy Garris, P.E., State Contract Officer
Mike Robinson, P.E., State Bridge Construction Engineer
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